



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/716,881	09/27/2017	Yehuda BINDER	BINDER-014-US4	7883
131926	7590	06/30/2020	EXAMINER	
May Patents Ltd. c/o Dorit Shem-Tov P.O.B 7230 Ramat-Gan, 5217102 ISRAEL			KHAN, HASSAN ABDUR-RAHMAN	
			ART UNIT	PAPER NUMBER
			2456	
			MAIL DATE	DELIVERY MODE
			06/30/2020	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte YEHUDA BINDER and BENJAMIN MAYTAL

Appeal 2019-002059
Application 15/716,881
Technology Center 2400

Before JOHN A. JEFFERY, JUSTIN BUSCH, and
LINZY T. McCARTNEY, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Under 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1, 33–36, and 41. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as May Patents Ltd. Appeal Br. 1.

STATEMENT OF THE CASE

Appellant's invention is a device used with a single wire pair that carries Direct Current (DC) power and digital data concurrently, where the device includes a splitter with three ports such that (1) a digital data signal is passed only between the first and second ports, and (2) a DC power signal is passed only between the first and third ports. *See Spec.* 157–58. The splitter's first port is also connected to a connector for connecting to a wire pair that carries DC power and digital data concurrently. *See id.* Claim 1 is illustrative:

1. A device for use with a single wire pair, the wire pair concurrently carrying Direct Current (DC) power and bi-directional digital data signals that is carried over a frequency band above and distinct from the DC power using Frequency Division Multiplexing (FDM), the device comprising:

- a connector for connecting to the wire pair;
- a splitter having first, second and third ports, wherein the digital data signal is passed only between the first and second ports, and the DC power signal is passed only between the first and third ports, and wherein the first port is connected to the connector;
- a software and a processor for executing the software;
- a transceiver coupled between the processor and the second port for transmitting digital data to, and receiving digital data from, the wire pair via the connector;
- a sensor for sensing a first phenomenon, the sensor having an output coupled for transmitting to the processor a value responsive to the first phenomenon; and
- a single enclosure mountable for housing the connector, the splitter, the processor, and the transceiver, wherein the transceiver and the processor are coupled to the third port for being powered from the DC power via the connector, and wherein the device is operative to transmit the value to the wire pair via the connector.

RELATED APPEALS

On page 2 of the Appeal Brief, Appellant informs us of two related appeals in copending applications 13/733,634 and 15/361,434. Those appeals have been decided. *See Ex parte Binder*, Appeal 2018-007694 (PTAB Mar. 2, 2020), *reh'g denied* (PTAB May 18, 2020); *Ex parte Binder*, Appeal 2019-000272 (PTAB June 10, 2020).

Although not indicated in the Appeal Brief or Reply Brief, this appeal is also related to two other appeals in copending applications 15/716,881 and 15/657,163, the latter of which has been decided. *See Ex parte Binder*, Appeal 2019-002056 (PTAB May 4, 2020).

THE REJECTIONS²

The Examiner rejected claims 1, 33–36, and 41 under 35 U.S.C. § 101 as ineligible. Non-Final Act. 5–6.³

The Examiner rejected claims 1, 33, 36, and 41 under 35 U.S.C. § 103 as unpatentable over Shostak (US 2010/0207754 A1; published Aug. 19, 2010) and Norris (US 2007/0198144 A1; published Aug. 23, 2007). Non-Final Act. 7–10.

² Because the Examiner withdrew a rejection under § 112, first paragraph (Ans. 3), that rejection is not before us.

³ Throughout this opinion, we refer to (1) the Non-Final Rejection mailed August 30, 2018 (“Non-Final Act.”); (2) the Appeal Brief filed December 16, 2018 (“Appeal Br.”); (3) the Examiner’s Answer mailed January 8, 2019 (“Ans.”); and (4) the Reply Brief filed January 13, 2019 (“Reply Br.”).

The Examiner rejected claims 34 and 35 under 35 U.S.C. § 103 as unpatentable over Shostak, Norris, and Kim (US 2005/0273505 A1; published Dec. 8, 2005). Non-Final Act. 11–12.

THE INELIGIBILITY REJECTION

The Examiner determines that the claimed invention is directed to an abstract idea, namely receiving and transmitting sensor data, which is said to be similar to abstract concepts identified by the courts, such as collecting and analyzing information, and displaying results of that analysis. *See* Non-Final Act. 5; Ans. 4. The Examiner adds that the claims do not include elements that add significantly more than the abstract idea, but merely recite elements that are well-understood, routine, and conventional. *See* Non-Final Act. 12; Ans. 4. Specifically, the Examiner identifies six additional elements that are said to amount to routine and conventional functionalities. Non-Final Act. 5–6.

Appellant argues that not only does the Examiner mischaracterize the claims, the claimed invention does not analyze information, let alone display results of such an analysis as the Examiner determines. *See* Appeal Br. 12. According to Appellant, the claimed invention not only differs from the claims in *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), the claimed invention satisfies the machine-or-transformation test, and is a technological improvement including, among other things, an unconventional electrical powering scheme. Appeal Br. 12–14; Reply Br. 2.

Appellant adds that the Examiner fails to show that the recited elements, such as (1) carrying power and data over the same wire pair, and (2) using that pair to (a) power a transceiver and sensor, and (b) transmit

sensor data, are well-understood, routine, and conventional. Appeal Br. 14–15. According to Appellant, these elements add significantly more to the abstract idea. *Id.*

ISSUE

Under § 101, has the Examiner erred in rejecting claims 1–10, 12–19, and 21–24 as directed to ineligible subject matter? This issue turns on whether the claims are directed to an abstract idea and, if so, whether the recited elements—considered individually and as an ordered combination—transform the nature of the claims into a patent-eligible application of that abstract idea.

PRINCIPLES OF LAW

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *See, e.g., Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement

risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 187 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 67 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 176; *see also id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). That said, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula

to a known structure or process may well be deserving of patent protection.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221 (quotation marks omitted). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

In January 2019, the United States Patent and Trademark Office (“USPTO”) published revised guidance on the application of § 101. *See* USPTO’s 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Guidance”).⁴ Under that guidance, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MANUAL OF PATENT EXAMINING

⁴ *See also* October 2019 Update: Subject Matter Eligibility, https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf.

PROCEDURE (MPEP) §§ 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018)).

Only if a claim (1) recites a judicial exception, and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not well-understood, routine, and conventional in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, and conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Guidance, 84 Fed. Reg. at 56.

ANALYSIS

Claims 1, 33–36, and 41: Alice/Mayo Step One

Representative independent claim 1 recites:

A device for use with a single wire pair, the wire pair concurrently carrying Direct Current (DC) power and bi-directional digital data signals that is carried over a frequency band above and distinct from the DC power using Frequency Division Multiplexing (FDM), the device comprising:

a connector for connecting to the wire pair;

a splitter having first, second and third ports, wherein the digital data signal is passed only between the first and second ports, and the DC power signal is passed only between the first and third ports, and wherein the first port is connected to the connector;

a software and a processor for executing the software;

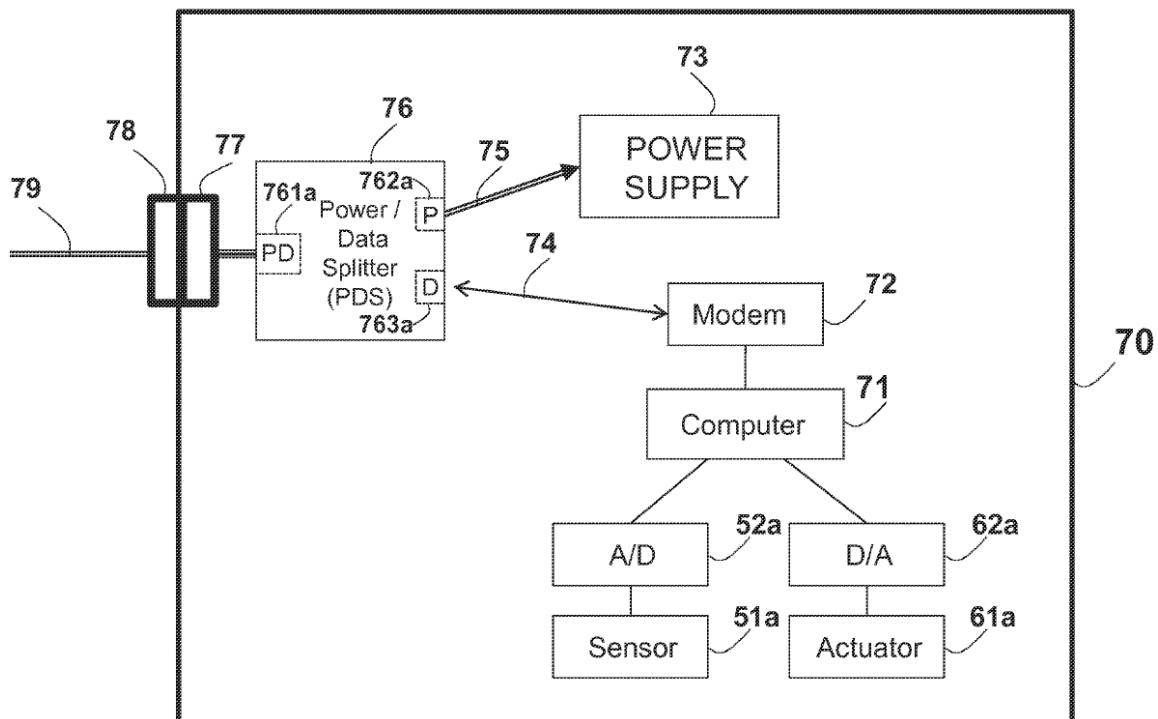
a transceiver coupled between the processor and the second port for transmitting digital data to, and receiving digital data from, the wire pair via the connector;

a sensor for sensing a first phenomenon, the sensor having an output coupled for transmitting to the processor a value responsive to the first phenomenon; and

a single enclosure mountable for housing the connector, the splitter, the processor, and the transceiver,

wherein the transceiver and the processor are coupled to the third port for being powered from the DC power via the connector, and wherein the device is operative to transmit the value to the wire pair via the connector.

A key aspect of the claimed invention uses a splitter with three ports such that (1) a digital data signal is passed only between the first and second ports, and (2) a DC power signal is passed only between the first and third ports. *See Spec.* 157–58. The splitter’s first port is also connected to a connector for connecting to a wire pair that carries DC power and digital data concurrently. *See id.* The Power/Data Splitter 76, with its ports 761a, 762a, and 763a, is shown in Appellant’s Figure 7 reproduced below.



Appellant's Figure 7 showing Power/Data Splitter and Ports

As shown above, the splitter's port 761a, labeled "PD," is connected to connector 77, and ports 762a (port "P" (power only)) and 763a (port "D" (data only)) are connected to power supply 73 and modem 72, respectively. *See Spec. 154, 157.* With this arrangement, electric power and digital data carried concurrently on cable 79 are received and split into independent and distinct signals, such that (1) electric power is transferred to the power supply via port "P" and connection 75, and (2) digital data is transmitted to and from the modem via connection 74. *See Spec. 157; Fig. 7.*

Turning to claim 1, we first note that the claim recites a device and, therefore, falls within the machine category of § 101. But despite falling within this statutory category, we must still determine whether the claim is directed to a judicial exception, namely an abstract idea. *See Alice*, 573 U.S.

at 217. To this end, we must determine whether the claim (1) recites a judicial exception, and (2) fails to integrate the exception into a practical application. *See* Guidance, 84 Fed. Reg. at 52–55. If both elements are satisfied, the claim is directed to a judicial exception under the first step of the *Alice/Mayo* test. *See id.*

In the rejection, the Examiner determines that claim 1 is directed to an abstract idea, namely receiving and transmitting sensor data, which is said to be similar to abstract concepts identified by the courts, such as collecting and analyzing information, and displaying results of that analysis. *See* Non-Final Act. 5; Ans. 4.

To determine whether the Examiner’s ineligibility rejection is erroneous, we first determine whether a claim recites an abstract idea by (1) identifying the claim’s specific limitations that recite an abstract idea, and (2) determining whether the identified limitations fall within certain subject matter groupings, namely, (a) mathematical concepts⁵; (b) certain methods of organizing human activity⁶; or (c) mental processes.⁷

⁵ Mathematical concepts include mathematical relationships, mathematical formulas or equations, and mathematical calculations. *See* Guidance, 84 Fed. Reg. at 52.

⁶ Certain methods of organizing human activity include fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions). *See* Guidance, 84 Fed. Reg. at 52.

⁷ Mental processes are concepts performed in the human mind including an observation, evaluation, judgment, or opinion. *See* Guidance, 84 Fed. Reg. at 52.

As noted previously, claim 1 recites a device used with a wire pair that carries DC power and digital data signals concurrently, where the device includes a connector and splitter that are arranged with respect to other device components *in a particular way* to identify, separate, and route DC power and digital data signals independently to different destinations. Notably, the claim recites, among other things, (1) a transceiver coupled between a processor and the splitter's *second port* to transmit digital data to, and receive data from, a wire pair via the connector; (2) the transceiver and processor *both* coupled to the splitter's *third port* for being powered from DC power via the connector; and (3) the device is operative to transmit a sensor value to the wire pair via the connector, where the connector is connected to the splitter's *first port*. These components and their particular arrangement in claim 1 do not fall within any of the subject matter groupings under the USPTO's Guidelines, namely (1) mathematical concepts; (2) certain methods of organizing human activity; or (3) mental processes and, therefore, do not recite an abstract idea. *See* Guidance, 84 Fed. Reg. at 52–54. For that reason alone, the Examiner's ineligibility rejection is erroneous. We, therefore, need not address whether any additional elements (1) integrate the purported abstract idea into a practical application, or (2) add significantly more to the abstract idea under step 2 of the *Alice/Mayo* framework.

Accordingly, we are persuaded that the Examiner erred in rejecting claims 1, 33–36, and 41 as ineligible.

THE OBVIOUSNESS REJECTION OVER SHOSTAK AND NORRIS

Regarding independent claim 1, the Examiner finds that Shostak discloses a device for use with a single wire pair that concurrently carries DC power and bi-directional digital data, where the device comprises, among other things, the recited splitter and port connections in Shostak's paragraph 615 and Figure 44. Non-Final Act. 7–8. Although the Examiner acknowledges that Shostak lacks the recited single enclosure, the Examiner cites Norris as teaching this feature in concluding that the claim would have been obvious. Final Act. 9.

Appellant argues, among other things, that not only are the cited references improperly combined, the Examiner's equating the recited splitter to Shostak's Figure 44 is misplaced because it shows only two circulator ports and lacks the recited digital data and power signals. Appeal Br. 16–19; Reply Br. 2–4.

ISSUE

Under § 103, has the Examiner erred in rejecting claim 1 by finding that Shostak and Norris collectively would have taught or suggested a device for use with a wire pair concurrently carrying DC power and bi-directional digital data signals, where the device includes:

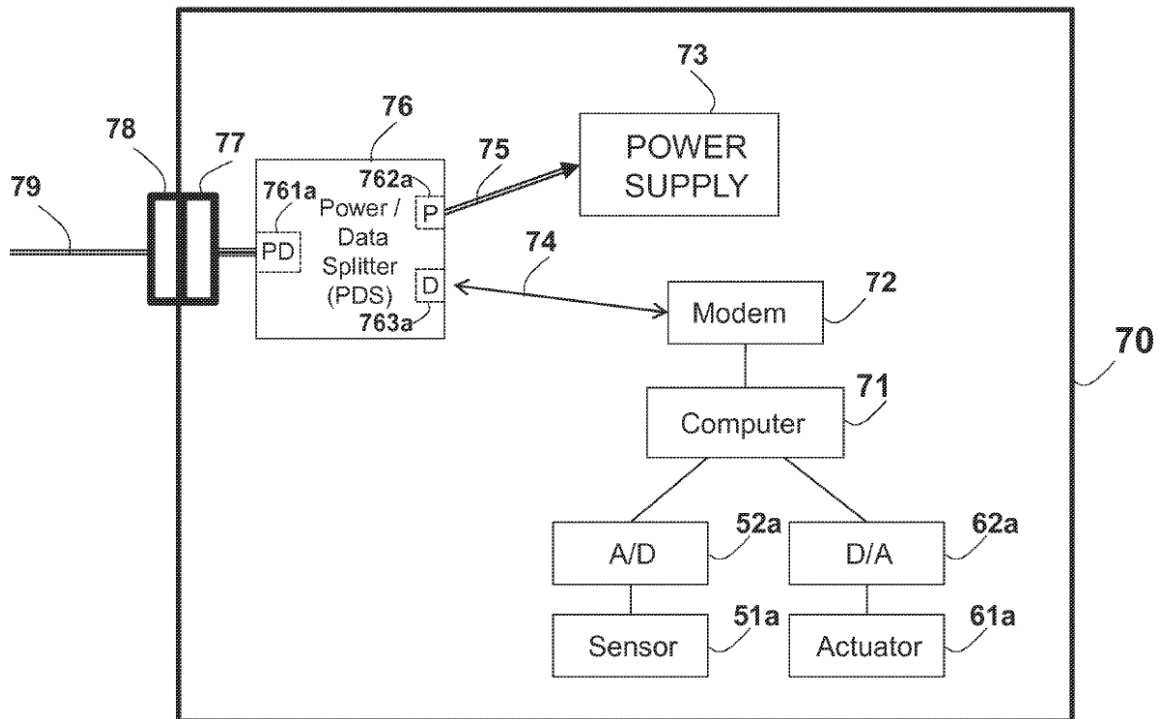
(1) a splitter with first, second and third ports, where (a) a digital data signal is passed only between the first and second ports; (b) a DC power signal is passed only between the first and third ports; and (c) the first port is connected to the connector;

(2) a transceiver coupled between a processor and the second port;
and

(3) the transceiver and processor coupled to the third port?

ANALYSIS

We begin by noting an inconsistency in the claim language and the corresponding description in the Specification. As noted above, a key aspect of the claimed invention uses a splitter with three ports such that (1) a digital data signal is passed only between the first and second ports, and (2) a DC power signal is passed only between the first and third ports. *See Spec.* 157–58. The splitter’s first port is also connected to a connector for connecting to a wire pair that carries DC power and digital data concurrently. *See id.* The Power/Data Splitter 76, with its ports 761a, 762a, and 763a, is shown in Appellant’s Figure 7 reproduced below.



Appellant’s Figure 7 showing Power/Data Splitter and Ports

As shown above, the splitter's port 761a, labeled "PD," is connected to connector 77, and ports 762a (port "P" (power only)) and 763a (port "D" (data only)) are connected to power supply 73 and modem 72, respectively. *See Spec. 154, 157.* With this arrangement, electric power and digital data carried concurrently on cable 79 are received and split into independent and distinct signals, such that (1) electric power is transferred to the power supply via port "P" and connection 75, and (2) digital data is transmitted to and from the modem via connection 74. *See Spec. 157; Fig. 7.*

On page 3 of the Appeal Brief, Appellant maps the following elements in Figure 7 to the recited splitter ports:

- (1) the first port to item 761a;
- (2) the second port to item 762a; and
- (3) the third port to item 763b.

According to claim 1, (1) a digital data signal is passed *only* between the *first and second* ports, and (2) a DC power signal is passed *only* between the *first and third* ports.

But as shown in Appellant's Figure 7 above, item 762a, which Appellant maps to the recited *second* port (Appeal Br. 3), is labeled "P," and according to the Specification's page 157, is supplied with a *power* signal. Claim 1, however, recites that a digital data signal—not a DC power signal—is passed between the *second* port and the first port.

Appellant's Figure 7 also shows item 763a, which Appellant maps to the recited *third* port (Appeal Br. 3), is labeled "D," and according to the Specification's page 157, is supplied with a *data* signal. Claim 1, however,

recites that a DC power signal—not a digital data signal—is passed between the *third* port and the first port.

Despite this inconsistency, the claim is nonetheless clear that the second and third ports are dedicated to DC power and digital data signals, respectively, such that each port passes *only* its respective dedicated signal (i.e., data or power) to and from the first port. This independent and distinct transmission of data and power signals from different ports reasonably comports with the functionality shown in Figure 7 and its associated description, notwithstanding Appellant inartfully transposing the recited second and third ports with their associated reference numerals 762a and 763a in Figure 7 (*see* Appeal Br. 3)—an error that we deem harmless on this record.

Turning to the rejection, the Examiner finds that Shostak’s Figure 44 and paragraph 615 teach the recited splitter and respective DC power and digital data connections between the splitter’s three ports. Non-Final Act. 8. On page 6 of the Answer, the Examiner adds Shostak’s Figure 43 and paragraphs 610 to 614 to the citations in the rejection.

These findings are problematic. According to Shostak’s paragraph 114, Figure 44 is a block diagram of the components of the circuit shown in Figure 43 that, according to paragraph 113, is a schematic of a circuit used in the boosting arrangement of Figure 42. Shostak’s Figure 42 schematically illustrates an arrangement for boosting signals to and from a surface acoustic wave (SAW) device. Shostak ¶ 112.

As explained in Shostak’s paragraph 615, Figure 44 shows the circuit of Figure 43 that includes electronic components arranged to form first and second signal splitters 225 and 226, where (1) splitter 225’s first port, Port

A, is adjacent antenna 223, and (2) splitter 226's second port, Port B, is adjacent SAW device 221. Shostak's Figure 44 showing the two splitters and associated antenna and SAW ports is reproduced below.

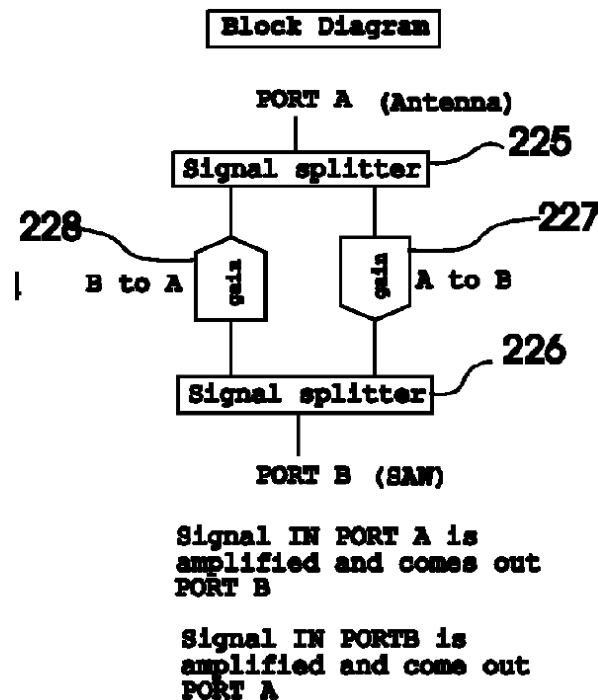


FIG. 44

Shostak's Figure 44 showing splitters and associated ports

The clear import of this functionality is that the device shown in Figure 44, with its two splitters and associated components in Figures 42 and 43, amplifies signals from one port to the other. *See* Shostak ¶¶ 610–615.

Given this arrangement that is used for an entirely different purpose than the claimed invention, we fail to see—nor has the Examiner shown—how this relied-upon functionality teaches or suggests the recited splitter and respective DC power and digital data connections between the splitter's

three ports, let alone the connections of the recited transceiver and processor with respect to the splitter's second and third ports. *Accord* Appeal Br. 19.⁸ The Examiner not only fails to map each recited port to respective structural elements in Shostak, but also fails to show the exclusive DC power and digital data signals and their respective port relationships, such that each port passes *only* its respective dedicated signal (i.e., data or power) to and from the first port as claimed. We will not speculate in that regard here in the first instance on appeal.

Therefore, we are persuaded that the Examiner erred in rejecting (1) independent claim 1, and (2) dependent claims 33, 36, and 41 for similar reasons. Because this issue is dispositive regarding our reversing the Examiner's rejection of these claims, we need not address Appellant's other associated arguments.

Nevertheless, we leave to the Examiner to reconsider the patentability of the claims over the prior art reference, *TP-Link® User Guide*, TL-POE10R, PoE Splitter (2010), hereby made of record, in combination with other prior art—including that cited in the related cases summarized in the “RELATED APPEALS” section of this decision, as well as other applicable prior art. As a Board of review—not initial examination—we need not address that patentability question in the first instance here, but rather leave

⁸ Although Appellant's arguments in the paragraph bridging pages 18 and 19 of the Appeal Brief regarding improperly combining distinct embodiments are germane to *anticipation*—not obviousness—we nonetheless deem this error harmless because Appellant's additional arguments regarding the rejection's deficiencies with respect to the splitter limitation (Appeal Br. 19) are applicable to the obviousness rejection.

this question to the Examiner to consider after this opinion in light of this new reference.

THE OTHER OBVIOUSNESS REJECTION

Because the Examiner has not shown that Kim cures the foregoing deficiencies regarding the obviousness rejection of independent claim 1, we will not sustain the obviousness rejection of dependent claims 34 and 35 (Non-Final Act. 11–12) for similar reasons.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 33–36, 41	101	Eligibility		1, 33–36, 41
1, 33, 36, 41	103	Shostak, Norris		1, 33, 36, 41
34, 35	103	Shostak, Norris, Kim		34, 35
Overall Outcome				1, 33–36, 41

REVERSED